



Grading fruit and vegetables will soon benefit from the IT revolution (© Photodisc)

A vision of quality for fruit and veg

When we go shopping many of us take the grading of fruit and vegetables for granted. It represents both uniformity and quality. However, for the food industry, considerable time and effort must go into such classification schemes. At present, both manual and semi-automatic means exist but these prove to be too expensive, tedious and slow. Nor can they guarantee the sort of accuracy that the market now expects. The time was ripe for a new solution.

The NIPCO project arose from the desire to see existing technologies improve sufficiently to deal with two specific problems. These were the classification and determination of quality of fresh and semi-processed products.

Since current commercial production processes operate at such speeds, a detection system that could face such demands was required. This project proposed using artificial vision to detect the maximum number of parameters from the analysed pieces.

Quality not quantity

To do so, they chose two quite different agricultural products to test. These were olives, before processing and sorting during packing – and potatoes, prior to storage as well as sorting during packing.

For olives, quality is paramount. Similarly, homogeneity is also a high priority. Manual processing, as it occurs today, is expensive and slow. Qualitative damage also occurs when the olives become pitted.

Potato growers will know the variety of sizes of tubers. Potatoes are graded mechanically according to their size while manual operators look after the quality side. However, this arrangement leaves many potatoes unchecked. Consequently, they are packed and distributed without external quality control.

Both obviously could do with a better system. A system based on artificial vision will produce a faster, more reliable, quality check. This will inevitably lower production costs. Being



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Fruit and vegetables (and many other products) are classified in one form or another. For fresh produce, classification is based on quality indicators. Traditionally such grading schemes have been wholly subjective. They are time consuming and prone to error. This project has devised a novel solution that uses artificial vision and computer software to analyse quality parameters as a basis for classification. The system was developed using olives and potatoes and is totally integrated within normal production processes. This system will prove to be a sight for sore eyes for Europe's fruit and vegetable industry – consistently accurately graded foodstuffs with minimal disruption to busy production schedules.

electronic, it can be integrated into the existing production process. The high-resolution images will analyse the fruit individually while being carried on a new process line. The results can then be used to activate the rejection system using mechanical elements synchronised via the various electronic circuits. So far, they have managed to build just such an electronic system that connects the camera, computer, belt and rejection system along with a processor to handle the data. Sounds like fiction but it is fact.

Seeing is believing

So far, the results prove promising, with potential applications to many other fruit and vegetables. A Vision Prototype has been developed and integrated with a processing line. This can be guided by a Man Machinery Interface which easily allows the quality inspector to sort out the good from the bad. The grading can be altered as desired, allowing even greater quality control than before. Soon our eyes will not be deceiving us – they will be as good as they look!

INFORMATION

FULL TITLE:

New image processing for characterisation of olives and other fruits (NIPCO)

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PROGRAMME:

FAIR, Cooperative Research Measures

LOCATION

■ SPAIN

■ THE NETHERLANDS

